

# PSYCHOLOGY TEACHERS UPDATE

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ASPECTS OF CHILDHOOD

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## PSYCHOLOGY TEACHERS UPDATE

Psychology Teachers Update is designed to give a brief overview of the main developments in the different areas of psychology. There is a proliferation of journals and research, and it is very difficult to keep abreast of the latest trends, particularly in the many and varied areas of psychology.

Each issue of Psychology Teachers Update will cover a particular topic, and summarise the main research directions and findings in the last ten to fifteen years approximately. The aim is to give teachers the feel of what is happening in that area of psychology.

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## DAY-CARE AND EARLY CHILD DEVELOPMENT

"Children's early development is a strong predictor of a variety of later outcomes including education, earnings, benefit receipt, early motherhood and even crime" (Hansen and Hawkes 2009 p211). This is the view today after over fifty years of debate about early child development and child-care, beginning with Bowlby in the post-Second World War period.

John Bowlby argued that non-maternal <sup>1</sup> day-care was damaging to the "emotional health" of young children. Subsequent research, like Clarke-Stewart and Fein (1983), found that day-care did not weaken the attachment with the mother.

But Jay Belsky (1988), referring to over 400 children, found that those who spent more than four months in their first year of life and over twenty hours per week in day-care were more likely to have an insecure attachment than children cared for at home by the mother. Attachment quality was measured using the Strange Situation technique (Ainsworth et al 1978). The research also reported in Belsky (1990) found aggression and non-compliance (disobedience) among day-care children.

Whereas Bowlby was writing about day-care generally among pre-school children, Belsky has focused upon day-care beginning in the first year. This difference has been because of the increase in the numbers of women working over the second half of the twentieth century, and consequently returning swiftly to work after the child's birth. Thus the rates of maternal employment in the USA for married mothers of three-year-olds and six-month-olds was "virtually indistinguishable" in 1990 (Belsky 2001). While UK employment rates of mothers rose from 51% in 1975 to 64% by 2005 (Hansen and Hawkes 2009).

Despite this fact, surveys of parents still find that the majority believe that the full-time maternal presence at home with the very young child is better than even the best quality day-care; eg: Farkas et al (2000) around two-thirds of over 800 US parents of five-year-olds.

The traditional idea of the mother as sole caretaker for the child does not reflect the picture around the world. Shared care, between the mother and other adults, female and male, kin and non-kin, between the mother and other siblings, is "by far the majority experience" (McGurk et al 1993). For example, among the Kikuyu of

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<sup>1</sup> Though the focus is upon the mother traditionally, today the situation can include fathers as in single father households. So maternal is used to mean primary attachment figure in many cases.

Kenya infants from four months old are left with female siblings aged 7-12 years old as the adults are involved in horticulture, while child rearing is shared by the several wives of a man among the Hausa (Nigeria)(McGurk et al 1993). Children still appear to form secure attachments to the mother in such situations.

Belsky's research in the 1980s led to "the day care wars" (Karen 1994). From this debate came the large-scale US study known as "NICHD-SECC" (National Institute of Child Health and Human Development Study of Early Child Care). It is a longitudinal study of 1300 children in ten US communities <sup>2</sup>.

It attempted to deal with a number of the issues raised in relation to previous research including:

- How attachment to the mother (or parent) is measured;
- Age of entry into day-care (particularly before or after one year of age);
- Quantity of day-care (ie: hours per week);
- Quality of day-care (eg: staff to child ratio);
- Actual effects of day-care (both positive and negative);
- Role of other variables (eg: poverty, single parenthood);
- Stability of care;
- Quality of parental care (eg: sensitivity to infant's needs).

Belsky (2008) admitted: "Given the very large number of publications that the NICHD-SECC has produced, to say nothing of the complex nature of child care and child development, there is no simple or singular way to summarise major findings of the study" (p8). Subsequently, he summarised the key findings by 54 months old around quality, quantity, and type of day-care (table 1).

Most of the focus, certainly in the USA and the UK, has been on the negative effects of day-care, but Andersson (1989) found positive benefits to early day-care in Sweden. Much of the difference may be due to Swedish society. Day-care was organised by the Government through day nurseries or family day-care (childminders). Mothers could also stay at home with the newborn as long as they wanted in the first year without losing their jobs.

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<sup>2</sup> Little Rock (Arkansas), Irvine (California), Lawrence (Kansas), Boston, Philadelphia, Pittsburgh, Charlottesville (Virginia), Morganton (North Carolina), Seattle, and Madison (Wisconsin)(Tran and Weinraub 2006).

	QUALITY OF CHILD CARE	QUANTITY OF CHILD CARE	TYPE OF CHILD CARE
ATTACHMENT	Higher quality = "more harmonious" mother-child interaction 6-36 months old.	Longer, and maternal insensitivity = insecure attachment.	/
COGNITIVE DEVELOPMENT	Stimulating child care = better cognitive and linguistic performance.	/	Centre-based care = greater language and cognitive development.
PROBLEM BEHAVIOUR	High quality = less problem behaviour at 24 and 36 months old.	Longer = greater problem behaviour.	Centre-based care = problem behaviour.

Table 1 - Key findings at 54 months old from NICHD-SECC (Belsky 2008).

Andersson (1989) followed 119 children from their first year to age eight, who were raised in Stockholm and Gothenberg. At eight years old, the children's cognitive performance was measured by an IQ test and teacher rating of school performance, and social competence by a teacher-completed questionnaire (eg: "often timid and anxious in various situations in school").

Children who entered day-care earlier performed better on the cognitive measures than later entry and home-reared children. The earlier entry children were rated as more independent and persistent, and less anxious.

BELSKY (2001)

In this review paper, Belsky revisited the controversies raised since the 1980s by his research and subsequent criticisms "about developmental risks associated with routine non-maternal care initiated during the first years of life, especially on a full- or near-full-time basis.." (p848). Two areas were the main focus - mother/parent-child relationship/attachment, and infant adjustment/social behaviour.

### Parent-Infant Relationship

The traditional view, coming from Bowlby, for example, was that the stress of daily separation from the mother to go to day-care would produce an insecure attachment to that parent. The Strange Situation technique is commonly used to measure this attachment, but it has been criticised as rating children as insecure

when they are not <sup>3</sup> (eg: Clarke-Stewart 1989).

Children who are routinely separated from their mothers will not show as much distress during the Strange Situation compared to children not routinely separated, and this reduced distress can be mistaken as a sign of no secure attachment. But Belsky and Braungart (1991) found no difference in distress shown by day-care or home-reared children with the same Strange Situation classifications of attachment. Belsky is confident that the Strange Situation is a valid measure of attachment.

Over the last few years of the twentieth century, studies analysed increasing numbers of cases to find the effect of day-care on maternal attachment (eg: Belsky and Rovine (1988) 491; Lamb and Steinberg (1990) 790), and from different cultures (eg: Verweij (1996) Netherlands). Many of the studies were contradictory.

The NICHD-SECC data showed that at 15 and thirty-six months of age, infants with at least ten hours of non-maternal care per week initiated in the first year of life were more likely to have an insecure attachment to the mother when the mother is insensitive to the child's needs, and when there is low quality, multiple care-giving arrangements (Belsky 2001).

Also in recent years, specific research on fathers and infants has shown that sons (not daughters) are more likely to develop insecure attachments to their fathers if the mothers are in full-time or near-full-time employment (eg: Braungart-Ricker et al 1999).

## Infant Adjustment and Social Behaviour

Belsky in the 1980s raised the concern about early day-care and socio-emotional adjustment (including aggression, non-compliance, and problem behaviour) during pre-school and early school years. Belsky and Eggebeen (1991), using extensive US data across the first three years of life, found that children in day-care for maternal employment had a lower adjustment score than children of mothers who did not work.

McCartney and Rosenthal (1991) did not replicate the findings from analysis of the same database (National Longitudinal Survey of Youth; NLSY). While Baydar and Brooks-Gunn (1991), from the same database, showed that maternal employment in the child's first nine months predicted behaviour problems at 3-4 years old. Other studies have used the same database.

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<sup>3</sup> Rated as insecure-avoidant (type A) attachment because child ignores mother when she returns to the room (episodes 5 and 8 of Strange Situation; Moxon et al 2003).

The timing, amount, and continuity of child care are seen as important variables here. As is the quality of day-care, which is measured differently in different studies - eg: number of caregiver-child interactions, caregiver training, child-caregiver ratio.

High-quality day-care has been shown to have positive effects, like more co-operative play and better school adjustment (eg: Field et al 1988). Children in day-care who formed secure attachments to their primary caregivers were rated as more socially competent at age four years (Howes et al 1992).

Low-quality day-care is often one part of the dual risk - early initiated day-care (Belsky 2001). While many children at low-quality day-care are from poor homes (Phillips et al 1994).

The NICHD-SECC data are mixed. Children who spent more time in day-care by age two years were rated as less co-operative and as having more behaviour problems at that age, but not at three years old. But the problems reappeared at school age (Belsky 2001).

It is important to gain multiple ratings of the child's behaviour from day-care staff, mother at home, and teachers at school (and, in some cases, peer ratings).

Belsky (2001) felt that: "No longer is it tenable for developmental scholars and child-care advocates to deride the notion that early and extensive non-maternal care of the kind available in most communities poses risks for young children and perhaps the larger society as well" (p867). Furthermore, Belsky (2001) argued that the debate about day-care has hidden the fact that family factors are much more important for the child's development.

The simple dichotomy of maternal care versus non-maternal care ("good vs bad"), which Bowlby and others advocated, is challenged by factors like unhappy mothers at home. The presence of the mother does not guarantee a secure attachment, particularly if the mother is depressed, bored, or unhappy staying at home. Dissatisfied or unhappy mothers are more often poor mothers, irrelevant of whether they are working or not (Hoffman 1974).

Belsky (2008) concluded that "...child care is a multi-faceted phenomenon and ..one of the major goals of the NICHD-SECC has always been to move debate and hopefully discussion beyond the all-too-simplistic question of whether child care is good or bad for children's development" (pp8-9).



## NICHD-SECC TO NICHD-SECCYD

The NICHD-SECC collected data every 3-4 months from the age of one month old until school entry. Observations of child-care settings were made at 6, 15, 24, 36, and 54 months old. All women giving birth in one 24-hour period in 1991 in ten locations were selected (n = 8986), and 1364 began the study one month later.

As the children reached school age (4½ years old) it was decided to continue the study as NICHD-SECCYD (Study of Early Child Care and Youth Development)<sup>4</sup>. The NICHD-SECCYD has so far followed up the children at 6 years old (1st grade in US schools), 8 (3rd grade), 10-11 (5th grade), and 11-12 years old (6th grade) with measures of cognitive and social functioning (Belsky et al 2007).

At school starting age, higher quality child-care predicted better language and "pre-academic" skills (eg: memory ability), but not social functioning. More hours in care predicted behaviour problems, but not language or "pre-academic" skills (Belsky et al 2007).

It has been possible to see effects at 4½ years of age that continue, disappear, or emerge for the first time at school (Belsky et al 2007)(table 2).

CONTINUED EFFECT (Present at all ages)	Higher quality care linked to higher "academic" abilities (eg: memory, vocabulary skills)
DISAPPEARED EFFECT (Not present after 4½ years)	More time in child-care and behaviour problems
NEW EFFECT (Appeared after school entry)	More time in child-care linked to lower social competence and poorer "academic work habits"

Table 2 - Examples of different types of effects of child/day-care found between 4½ years and later school age.

Data from the NICHD-SECC showed that multiple child care arrangements in the first fifteen months of life had an effect on language development. Unstable child care (ie: changes of care within to outside the family and vice versa) was associated with poorer language development, while multiple family caregivers was associated with better language development (Tran and Weinraub 2006).

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<sup>4</sup> The NICHD-SECC and NICHD-SECCYD have a steering committee (Early Child Care Research Network; ECCRN) of academics including Alison Clarke-Stewart and Jay Belsky.

## Strengths of NICHD-SECCYD

1. Attempts to disentangle effects of quality, amount (quantity), and type of day-care. Most studies tend to concentrate upon one of the three variables.
2. "Child-care" was defined as "any and all non-maternal care that regularly scheduled for at least ten hours per week" (Belsky et al 2007). This allowed the inclusion of care by fathers, grandparents, and other relatives.
3. Measured attachment through observations of mother-child interactions rather than just with Strange Situation as in previous studies.
4. Extensive collection of data on many variables to control for various effects (eg: quality of parenting, quality of classroom instruction at school).
5. Multiple measures of variables were made to overcome "selection effects" (Belsky 2008). This is the fact that families that use day-care will be different to families that do not use it. So any differences between the children may be due to this rather than the effects of the day-care.
6. Large, diverse sample, but not nationally representative (Belsky et al 2007) nor large number of extremely poor families (Belsky 2008).

## Belsky et al (2007)

Belsky et al (2007) reported assessments of the children at 11-12 years old (6th grade). Many different measurements that had been collected over the length of the NICHD-SECCYD were analysed including:

- Child-care quantity - Hours per week of routine non-maternal care were computed from telephone interviews, as was "relative care" (eg: fathers, grandfathers) and "non-relative care".
- Child-care type - Classified as centre (eg: day nursery), child-care home (outside child's home, but in home of another; eg: child-minder), in-home care (child's own home; eg: nanny), grandparent care, or father care.
- Child-care quality - This was based upon observations using the Observational Record of the Caregiving Environment (ORCE)(NICHD ECCRN 2002).
- Family variables - eg: maternal education, maternal

depression, parenting quality. The latter was scored from a fifteen-minute video-recording of the mother-child interaction on specific tasks (NICHD ECCRN 2003).

- Classroom quality - Based on observations; eg: teacher's sensitivity to pupil's needs, teacher's emotional detachment.
- After-school care.

Table 3 details the main outcome measures used in the NICHD-SECCYD.

OUTCOME	MEASURE
Cognitive-academic achievement	Woodcock-Johnson Psycho-Educational Battery-Revised; eg: assesses reading skills and passage comprehension.
Social skills	Social Skills Rating System (Gresham and Elliott 1990) - 38 items; eg: "makes friends easily", "asks permission before using someone else's property".
Behaviour problems	Child Behaviour Checklist Teacher Report Form (Achenbach 1991) - 100 problem behaviours rated by teachers.
Conflict with teacher	Student-Teacher Relationship Scale (Pianta 2001) - 7 items rated by caregivers/teachers; eg: "dealing with this child drains my energy".
Work habits	Teachers completed a mock report card with 19 items; eg: "works well independently".
Socio-emotional functioning	7 items rated by teachers; eg: "is aware of the effects of his/her behaviour on others".

Table 3 - Main outcome measures used in the NICHD-SECCYD.

The main findings can be summarised as follows:

i) Child-care quality - Children who had experienced higher quality care before 4½ years had higher vocabulary scores at age 10-11 years. Higher quality care linked to higher reading scores at 4½ years, but not at 10-11 years old.

ii) Child-care quantity - Longer time in child-care predicted teacher-rated behaviour problems and conflict at 4½ years, but not at twelve years old. A new effect appeared by 10-11 years old: lower vocabulary scores for longer early day-care.

iii) Type of child-care - Teachers rated more behaviour problems at all school ages for children who attended "centre" care.

iv) Parenting quality - This was a powerful predictor of outcome measures at school. Higher levels of parenting quality and better maths and vocabulary scores, higher levels of social skills, socio-emotional functioning and work habits, and less behaviour problems and conflict with teacher.

## GRANDPARENTS

In modern "beanpole families" (long thin groups of several small generations)(Grundy et al 1999), grandparents become more important as there are less aunts, uncles, cousins, and siblings. In the UK, nearly half of nine-month-olds in the Millennium Cohort Study <sup>5</sup> were cared for by grandparents when mothers returned to work (Dex and Joshi 2005).

Fergusson et al (2008) used data from the Avon Longitudinal Study of Parents and Children <sup>6</sup> which included all women in the Avon Health District who gave birth between 1st April 1991 and 31st December 1992. The data provided a picture of child-care arrangements as well as the role of grandparents.

The vast majority of children (around 90%) received regular non-maternal care in the first two years of life. Grandparents were the second most important providers of care, for at least one hour per week, after the mother's partner (table 4).

TYPE OF CHILD-CARE	PERCENTAGE OF CHILDREN
Mother's partner (including biological fathers)	70
Grandparents	45
Childminders/nannies	17-21
Friends/neighbours/other relatives	10-15
Nursery care	3.7 at 8 mths old 6.4 at 15 mths 10.4 at 24 mths

Table 4 - Percentage of children receiving regular care from different sources at 8, 15, and 24 months old.

Grandparents were more involved in caring with

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<sup>5</sup> This involved 19 000 children born in the UK in a twelve-month period in 2000 and 2001 in selected areas. The first survey took place at nine months (MCS1), then at three years old (MCS2) (Hansen and Hawkes 2009).

<sup>6</sup> <http://www.alspac.bris.ac.uk>

younger mothers. For example, if the mother was younger than nineteen years old at birth, the grandparents were twice as likely to be involved than if the mother was over thirty.

The relationship between grandparent care in the first two years of life and emotional/behavioural difficulties at age four years was measured by the Strengths and Difficulties Questionnaire (SDQ) (Goodman 1997) completed by the parent. It measures conduct, emotional, hyperactive, and peer problems as well as a total score including pro-social behaviour. Higher scores were associated with greater involvement of grandparents in care. Controlling for variables like family type, poverty, and maternal depression, only hyperactive behaviour was significant (table 5).

BEHAVIOUR	ODDS RATIO *
Total SDQ score	1.16
Conduct problems	1.04
Emotional problems	1.08
Hyperactivity	1.28 (p<0.05)
Peer relationship problems	1.08

(\* Odds ratio of 1 = risk with no grandparent involvement; thus number greater than 1 means greater risk)

(After Fergusson et al 2008)

Table 5 - Odds ratio of problem behaviour at age four years between grandparent involvement in caring at 8, 15, and 24 months, and no grandparent involvement.

In another UK study (Hansen and Hawkes 2009), children looked after by grandparents during the day at age nine months were rated as less sociable with other children than children at nursery, creche, childminder, nanny, or with another relative at three years old (table 6). Using data from the Millennium Cohort Study (4800 children of working mothers), child with grandparents, however, scored higher on vocabulary tests at three years old. But grandparents were associated with vocabulary benefits for more advantageous groups (eg: better-educated mothers, two-parent families), and the problem behaviour was especially for boys (both from advantaged and disadvantaged groups).

Cognitive ability was measured by the British Ability Scale (vocabulary test) and the Bracken School Readiness Composite (eg: counting), while the Strengths and Difficulties Questionnaire was used to measure behavioural development.

"Grandparents tend to make more of an effort to sit down and talk to children to make up for lack of physical

activity, but there's also some evidence that they are more likely to use better grammar, have better vocabulary themselves and correct children more, unlike other people" (Kristine Hansen quoted in Lipsett 2009).

Interestingly, formal group care was associated with Bracken School Readiness score, but not problem behaviour. "These different relationships remind us that childcare covers a variety of different types of care arrangements, which are likely to vary in the degree to which they educate and/or care for the child. Different types of care are likely to provide different experiences for the child.." (Hansen and Hawkes 2009 p231).

Overall, the authors admitted:

However, we need to remain slightly cautious when interpreting these findings as, although we measure childcare and all other control variables at age nine months ( $t -1$ ) and child outcomes at age three ( $t$ ), we cannot be sure we are identifying a causal relationship. Moreover, we would ideally like to be able to elaborate on why the different forms of childcare are differentially associated with the child outcomes examined in this article. For this, we would need information on how the children are cared for in different settings. Unfortunately, such information does not exist in the data we use nor, as far as we are aware, in any available large-scale dataset in the UK.. (Hansen and Hawkes 2009 p233).

TYPE OF CHILD-CARE	CHILDREN (%)
• Formal group care (nurseries, creches)	23.1
• Formal non-group care (childminders, nannies, au pairs)	17.3
• Informal partner care (child's father, mother's partner)	19.7
• Informal grandparent care (usually maternal grandmother)	35.3
• Informal other care (other relatives, friends, neighbours)	4.6

(After Hansen and Hawkes 2009)

Table 6 - Different forms of child-care used by working mothers in Millennium Cohort Study.

## FATHERS

Despite some interest in the father and the child's development, most of the focus is upon the mother (eg: maternal depression). Davé et al (2005) were the first to study the effect of paternal depression on the child's development.

Fathers of newborns at a London district general hospital who were biologically related to the child, and living with the child and partner were recruited. The fathers completed the Hospital Anxiety and Depression Scale (HADS) <sup>7</sup> and the Edinburgh Post-natal Depression Scale (EPDS) <sup>8</sup> four to six weeks after birth. Six months after birth the fathers completed the Brief Patient Health Questionnaire (Brief PHQ)(Spitzer et al 1999).

The main outcome measure of the child's behaviour was the Infant Characteristics Questionnaire (Bates et al 1979) which included "fussy infant temperament" (ie: difficult or demanding child).

Forty-eight fathers completed the questionnaires at 4-6 weeks, and four were scored as clinically depressed. However, none of these four completed the Brief PHQ at six months. Among the nineteen men who responded at six months, Brief PHQ scores significantly positively correlated with infant fussiness score. Other related variables to high infant fussiness were traditional attitudes towards fathering, and recent stressful life events, while better couple relationship quality was associated with lower infant fussiness. This was a very small-scale study, though.

#### EFFECTIVE PROVISION OF PRE-SCHOOL EDUCATION (EPPE)

The EPPE Project is a longitudinal study of the intellectual, social, and behavioural development of over 3000 children between the ages of three and seven years in England <sup>9</sup>. It compared different types of nurseries and "home" children on pre-school education.

A number of key findings were made (Sylva et al 2003):

- Any "pre-school experience" (ie: nursery) was better than none for children's development;
- Earlier attendance was related to better intellectual development and improved independence, concentration, and sociability;
- Disadvantaged children gained significantly from good quality pre-school experiences;
- Good quality nurseries had more qualified staff including qualified teachers;

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<sup>7</sup> A standard measure of depression and anxiety (Zigmond and Smith 1983); eg: "I feel as if I am slowed down", "I have no interest in my appearance".

<sup>8</sup> Traditionally used to screen women (Cox et al 1987).

<sup>9</sup> The study ran from January 1997 to April 1999 with 141 pre-school settings in six English local authorities. The EPPNI ran separately in Northern Ireland (Sylva et al 2001).

- "Integrated centres" which combined both education and care led to most intellectual progress;
- The home learning environment promoted intellectual and social development (eg: reading to child, visiting library, teaching alphabet).

Sylva et al (2003) concluded that "EPPE has shown that pre-school has an impact on children's development. Whilst not eliminating disadvantage, it can help to ameliorate the effects of social disadvantage and can provide children with a better start at school".

Sylva et al (2004) reported that benefits of pre-school experience remained throughout Key Stage 1 at school (6-7 years old), but some were not as strong as at school entry (5 years old) (eg: academic attainment in reading and mathematics).

So pre-school education is beneficial generally. Diamond et al (2007) looked at a specific technique called "Tools of the Mind" (Bodrova and Leong 2007). This technique has "executive-function-promoting activities" including telling oneself out loud what to do, and improving memory. Executive-function (EF) is a term used to include inhibitory control (eg: resisting temptation), working memory, and cognitive flexibility.

Diamond et al studied 147 pre-schoolers in a low-income, urban school district in the USA who received either "Tools of the Mind" or "Balanced Literacy curriculum" used in that school district.

E-F was tested in two ways:

i) Dots task - A heart or a flower appears on a computer screen and the child must respond to a previously determined rule - "press on the same side as the heart" (Dots-Congruent) or "press on the side opposite the flower" (Dots-Incongruent). The task requires memory of the rule and inhibition of the tendency to press on image side.

ii) Flanker test - Two shapes were presented together on the screen and children respond to the inner one of them when Congruent (eg: two circles) or Incongruent (eg: circle inside triangle). Reverse flanker concentrates on the outer shape. This tested recall and attention.

The "Tools" children were more accurate on all tasks (table 7).



TASK	"TOOLS" GROUP	"LITERACY" GROUP
Dots-Incongruent	>80	70
Flanker	>90	80
Reverse Flanker	84	65

Table 7 - Percentage of correct responses.

#### AT-RISK CHILDREN AND CHILD-CARE

Much of the previous research looks at children generally, but there is research that concentrates upon at-risk children (eg: poverty, abuse).

Recent research has emphasised the importance of appropriate care. Kotch et al (2008) found that children left in the early care (0-2 years) of an inappropriate guardian leading to neglect contributed to aggression at age eight years. Early abuse, later abuse, and later neglect did not predict aggression among 1300 at-risk children in four US cities in the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN).

Neglect included lack of met physical needs and lack of supervision to ensure child's safety (as measured by the Modified Maltreatment Classification Scheme; MMCS). Aggression was measured with the Child Behaviour Checklist (CBCL). It included 20 items (eg: "gets into many fights") with response choices of "not true" (0), "somewhat or sometimes true" (1), or "very true or often true" (2) giving a maximum score of forty.

Kotch et al noted that "Despite the fact that neglect is the single most frequent type of maltreatment, it is less frequently the subject of studies, compared with other maltreatment types. This may be partly attributable to the mistaken belief that physical or sexual abuse is more serious than neglect ..As this study demonstrates, neglect may have profound and long-lasting effects on the child, particularly if that neglect occurs early in the child's development" (p729).

#### Sure Start

"Sure Start" is a policy of early intervention developed by the Labour Government in the late 1990s influenced by the ideas of "Project Headstart" in the USA. The focus was upon interventions to help disadvantaged children. Deprived communities and neighbourhoods were the places for "Sure Start Local Programmes" (SSLP) (Melhuish and Hall 2007). They were "intended to break the intergenerational transmission of

poverty, school failure and social exclusion by enhancing the life chances for children less than four years of age growing up in disadvantaged neighbourhoods" (Belsky and Melhuish 2007 p133).

The National Evaluation of Sure Start (NESS) was launched in 2001 to assess the effectiveness of SSLPs. Belsky and Melhuish (2007) reported the comparison of families in 150 SSLP communities (n = 12 575) with fifty similarly disadvantaged communities not receiving Sure Start Programmes yet (n = 1509).

Four main groups of outcome variables were used - supportive parenting (eg: responsive), negative parenting (eg: parent-child conflict), child social competence (eg: independence), and child emotional-behavioural difficulties. Data were collected at nine months and 36 months old.

The results can be summarised into the effects of SSLPs on parents and on children:

- Parents - Modest benefits in family functioning: less chaotic households at nine months and more accepting of child's behaviour at 36 months (eg: less slapping, scolding). But "many more family outcomes appeared to be unaffected by SSLPs" (Belsky and Melhuish 2007).
- Children - Both positive and negative effects at 36 months old as well as no effects on some outcomes. Positively, children of non-teen mothers had less behaviour problems and greater social competence. Negatively, the opposite was true for children of teen mothers.

Overall, "those parents/families with more personal, social and economic resources available to them were better able to take advantage of SSLP services and resources than those with fewer resources (that is, teen parents, lone parents, workless households) (Belsky and Melhuish 2007 p150). However, longitudinal studies are still ongoing.

Furthermore, Barnes (2007) noted that "some improvements in SSLP areas were detected, although few could be linked in a straightforward way to SSLP activity, if only because many simply reflected national trends.." (p190).

To the question of whether SSLPs have been worthwhile, Michael Rutter (2007) was "cautiously positive", though admitting it was "impossible to give a firm answer to the question".

## Institutional Child-Care

Institutional child-care in children's homes or

orphanages is viewed negatively since the classic studies in the mid-twentieth century, like Goldfarb (eg: 1943) or Skeels and Dye (1939). But, by today's standards, these studies were poorly designed and usually with very small samples.

In recent years, large institutional care has declined in the USA and the UK while research design has become more stringent, so it has been difficult to confirm or disprove the early studies empirically. However, such institutions exist in Romania, which has been the focus of a number of studies, including adoption of children from orphanages since the 1990s (eg: English and Romanian Adoptees Study Team).

Nelson et al (2007) reported details of the Bucharest Early Intervention Project (BEIP). This involved a randomised controlled trial of children in institutional care from birth or soon after, of which half were placed in foster care. Previous studies have selection bias when using natural groups because healthier or more "psychologically competent" children are often those fostered and "poor quality" children left in institutions.

136 children less than 31 months of age in six institutions in Bucharest were randomly chosen for foster care or not. Advertisements were placed in local newspapers to find foster carers. The study was supported and approved by the Romanian Government. A third group of children reared by their families was used as a control (n = 72).

Cognitive development was the main focus and it was measured in various ways at baseline, thirty, and forty-two months old. Cognitive development was significantly better in foster care than in institutional care (table 8).

	INSTITUTIONAL GROUP	FOSTER GROUP	HOME GROUP
Baseline	72.2	75.6	
42 mths	77.1	85.7	103.4
54 mths	73.3	81.0	109.3

(After Nelson et al 2007)

Table 8 - Mean combined DQ (Developmental Quotient) and IQ scores.

Children placed in foster care at a younger age (before two years old) showed the best improvements. Statistical calculations showed that remaining in an institution "cost" the child 0.59 IQ points per month

compared to fostering.

Table 9 summarises the strengths of the BEIP over earlier studies on institutional care and intellectual development.

1. Random assignment of children to be fostered overcomes selection bias.
2. Baseline measures of intelligence.
3. Use of standardised measures of intelligence (eg: Bayley Scales of Infant Development; BSID-II).
4. Support of authorities in Romania during study, including ensuring that no child placed in foster care was returned to an institution.
5. Larger samples.
6. Matched control group of never-institutionalised children raised at home, born at same maternity hospitals as institutional children.

Table 9 - Strengths of BEIP over early studies of institutional care.

Smyke et al (2007) compared children in institutions (n = 125) with the never-institutionalised group (n = 66) as part of the BEIP. Emotional expression was measured by the children's reaction to an episode involving puppets acted out by a female experimenter, and problem behaviour was reported by the caregiver on the 195-item Infant-Toddler Social and Emotional Assessment (ITSEA) (Carter et al 2003).

As well as the poorer intellectual development of institutionalised children, these children displayed less frequent positive emotions and negative emotions more frequently. There were no overall differences on problem behaviours between the two groups.

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# THE GROWTH OF MEDIA AND CHILDREN IN THE 21ST CENTURY

## CONCERNS FOR CHILDREN

There are many concerns about life for children in the twenty-first century in the West. Often they are related to the growth of the media, and particularly to the accessibility of the Internet in recent years. For some it is a "dangerous" time for children, while others talk of over-reactions and "moral panics". This topic is too large (and controversial) to do justice to in a short article, but a selection of studies are considered.

The concern for children with the increasing dominance of every aspect of life by the media has also been seen in the context of "moral panics" that greeted all new media from comics, cinema, to television.

The changes in media are more than just changes in technology - they are "far more commercialised, profitable, market-led". Also "mass communication itself is being transformed by the growth of interactive, personalised and social media" (Livingstone 2008).

The increase in the availability and advertising of "fast foods" has been accused (among others things, like less exercise) of causing the increased childhood obesity. Family environment is important in children's eating behaviour in terms of the food available, the modelling of food preferences by adults, activity levels, and responses to advertising (Cassidy 2006).

At the same time, there are concerns about adolescents and eating disorders, especially anorexia nervosa. McCabe and Ricciardelli (2003) have found that pre-adolescent concerns about weight predicts "chronic body-image problems" in adolescence and adulthood.

Coontz (1997) described a tension where childhood, on the one hand, has been prolonged as measured by dependence on parents, and restrictions, while autonomy has increased in terms of leisure and consumption.

"Faced with anxieties about streets, parks, even the swimming pool, home seems safer. To occupy them, we fill our homes with media" (Livingstone 2008). But, in reality, home is not safe - each year, for example, in the UK, 73 for every million children are murdered by their family members compared to less than one per million by strangers (Livingstone 2008).

Whether the concerns for children today are founded or not, the structure of the family has changed in recent years. Using mainly data from the Millennium Cohort Study (MCS) (Dex and Ward 2007), the Equal Opportunities



Commission (EOC 2007) noted "the demise of the 'breadwinner dad' and 'homemaker mum' (table 10), while there is a distinct divide between "have" and "have-not" families. This division is seen in access to formal child-care and parental opportunities after birth (table 11).

TYPE OF FAMILY SITUATION	FAMILIES (%)
• Lone parent/not employed	11
• Lone parent/employed	6
• Both parents not employed	4
• Father employed/mother not	29
• Both full-time employment	11
• Father full-time/mother part-time	35
Mother employed/father part-time or not employed	4

(After EOC 2007)

Table 10 - Employment in families of MCS in 2003 (when children three years old).

	MANAGERIAL & PROFESSIONAL	SEMI & UNSKILLED
Took more than 3 months maternity leave	72	51
Father took leave around child's birth	85	71
Use of formal child-care when child 9-10 months old	65	7
Access to flexible working arrangements for fathers when child 9-10 months old	81	46

(After EOC 2007)

Table 11 - Difference between managerial/professional and semi/unskilled families in MCS in relation to child-care.

## COMMERCIALISATION OF CHILDHOOD

Williams (2007) authored the report, "The Commercialisation of Childhood" for the organisation, Compass<sup>10</sup>. She began:

The child-oriented market in the UK is now worth £30 billion and has laid roots in every aspect of children's lives affecting how they learn, and what they eat and how they play. Advertisements and

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<sup>10</sup> Compass describes itself as "Direction for the democratic left" (<http://www.compassonline.org.uk>).

marketing messages are also shaping the way children see themselves and the world and are impacting on their values, aspirations, health as well as the way they feel about themselves (p4).

For example, the average ten year-old can recognise 300-400 brands, and children between 7-15 years old spend an average £13 per week (Williams 2007).

Childhood is being commercialised in a number of ways:

i) Television advertisements and product placement - It is estimated that children in the UK, USA, and Australia see between 20 - 40 000 television advertisements each year (Palmer 2006). The ability to understand marketing intention for what it is appears around 11-12 years old (Palmer 2006). But when individuals become aware of such intent, product placement in films gets "under the radar" of teenagers and adults.

ii) Pop-up advertisements and "advertgames" on the Internet.

iii) Advertisements throughout society on buses, trains, and at sports grounds, for example.

iv) "Peer promotion" which rewards children for promoting products like "telling everyone on the net about it". This links to the idea of "being cool", which one US advertising executive admitted was crucial: "...if you tell them that they'll be a dork if they don't, you've got their attention. You open up emotional vulnerabilities and it's very easy to do with kids because they are the most emotionally vulnerable" (quoted in Williams 2007 p9).

v) "Pester power" - Getting child to "nag" their parents to buy things. This can influence all sorts of purchases; eg: 67% of US car purchases (Williams 2007).

The impact of this commercialisation is seen in different ways:

a) Psychologically - eg: stress, dissatisfaction with self, poor relationships, and mental health problems. "In grooming children to buy into brands and immersing them in messages convincing them they need things to be happy, marketers are cementing and promoting materialism in them" (Williams 2007 p11).

In terms of the changes in attitudes, Myers (2000) reported data from first-year students at the University

of California collected since the 1960s. Those who thought that "being well off financially" was most important increased from 40% at the beginning to over 70% by the end of the 1980s, while agreement that it is important to "develop a meaningful philosophy of life" has fallen from 80% to 40% in the same period.

b) "Growing up too soon" (or "kids are getting older younger" (KAGOT); Palmer 2006) - "The boundaries between the child and adult worlds are disappearing" (p5).

c) Stifling development - for example, 70% of three year-olds recognise the McDonalds symbol, but only half knew their own surname. While Palmer (2006) sees many toys as encouraging "passive, sedentary entertainment".

d) Interfering in education with schemes like supermarkets' vouchers for schools.

e) Poor health - Concern about the "junk food" diet.

f) Family conflict over what to buy in the supermarkets. One parent admitted: "I've lost count of the number of tantrums I have had in Asda because I won't let the girls have cereal just for the free gift" (quoted in Williams 2007 p5).

The whole report, "The Commercialisation of Childhood", paints a depressing picture of life for children today. But it must be remembered that many of these processes are occurring for adults as modern Britain is so much more consumer-oriented than a quarter of a century ago. Personally, I do not think that is a good thing (Brewer 2001a).

On a more positive note, individuals are not passive automatons, but are active in the socialisation process. Compass used the report to launch a campaign to highlight these issues in order to bring about change - let "children be children before they are consumers".

## SEXUALISATION OF GIRLS

The APA Task Force on the Sexualisation of Girls (2007) highlighted the role of the media in the sexualisation of women and girls in a number of ways:

i) Television generally - Studies show the sexual objectification <sup>11</sup> of women through comments (eg: bimbo,

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<sup>11</sup> Sexual objectification is "made into a thing for others' sexual use, rather than seen as a person with the capacity for individual action and decision-making" (APA Task Force on the Sexualisation of Girls 2007 p2).

babe, dumb ass chick) and image presented focusing on body parts (eg: jugs, knockers, hooters).

ii) Music videos - Sexually objectifying images of woman: "They are often displayed in ways that emphasise their bodies, body parts, facial features, and sexual readiness" (APA Task Force on the Sexualisation of Girls 2007 p6).

iii) Music lyrics - eg: 15% of 164 songs popular with teenagers had sexually degrading lyrics, but this was 70% in songs by rap and R&B artists (Martino et al 2006).

iv) Films - eg: female nudity is four times more common than male nudity in general release films in the 1980s (Greenberg et al 1993).

v) Cartoons and animation - Many female characters are presented as domestic, interested in boys/men, and concerned with their appearance (Thompson and Zerbinos 1997).

vi) Magazines - Studies of teen and women's magazines show that "presenting oneself as sexually desirable and thereby gaining the attention of men is and should be the focal goal for women" (APA Task Force on the Sexualisation of Girls 2007 p8).

vii) Sports media - Coverage of female sports and sportswomen is less than men's generally, but those women presented are often sexualised; eg: eight US Olympic female athletes appeared in "Playboy" in September 2004 (APA Task Force on the Sexualisation of Girls 2007).

Shugart (2003) analysed media coverage of the US women's football team in 1999. The coverage was divided into three categories - "subtle sexualisation" (focus on physical appearance rather than skill), "less subtle sexualisation" (eg: "booters with hooters" comment), and "vigilant heterosexuality" (references to players' families).

viii) Video/computer games - eg: Hanlinger and Thompson (2004) reported that female characters were more likely to be partially nude or engaged in sexual behaviours than male characters in eighty "teen-rated" video games in 2001.

ix) Internet - For example, websites of female celebrities or musicians were more likely to include sexualised images (Lambiase 2003).

x) Advertising - eg: 75% of beer advertisements and 50% of non-beer ones during US prime-time sports and

entertainment programmes were rated as "sexist" (Rouner et al 2003).

The APA Task Force on the Sexualisation of Girls (2007) noted that although advertising does not sexualise girls directly, it does so indirectly as young girls as "adultified" (dressed up as grown women) and adult women are "youthified" (dressed down as little girls).

xi) Products - Particular products highlighted were dolls (eg: "Bratz" dolls in mini-skirts and fishnet stockings), clothing (eg: thongs available for "tweens"<sup>12</sup>), and cosmetics (eg: fruity lip glosses for pre-teens).

The APA Task Force on the Sexualisation of Girls (2007) also highlighted the role of familiar adults in the socialisation process including positive feedback for physical appearance. In the extreme case, the USA has beauty contests for five year-olds dressed up to look like adult women. While 77 000 cosmetic surgical procedures were performed in the USA on under eighteens in 2005, and these could only happen with parental consent.

The report by the APA Task Force on the Sexualisation of Girls (2007) is depressing to read, and even though the vast majority of studies and examples are from the USA, similar patterns are evident in the UK. it must be remembered that the "sexualisation of girls" is part of the sexualisation (or "heterosexualisation"; Brewer 2001b) of society generally (which includes pressures upon boys and men). From an absolutely pragmatic position, if this is how girls and women "succeed" in society, then presenting themselves "sexually" is a shrewd move. I don't really believe this.

## THE INTERNET

Three-quarters of 5-15 year-olds have Internet access at home, 11% in their bedrooms. The majority have television sets in the bedrooms (71%) as households with children in the UK have an average of 3.3 televisions (Livingstone 2008).

"The internet.. intensifies the media experience.. offers children more subject positions, not just recipient of mass-produced content but also player, searcher, communicator, content creator, victim, and.. perpetrator" (Livingstone 2008).

Furthermore, as Greenfield and Yan (2006)<sup>13</sup> pointed

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<sup>12</sup> "Tweens" = 7 years to teenage.

<sup>13</sup> This is an editorial to a special issue (volume 42, no.3, 2006) of "Developmental Psychology" on

out, "it is important not to see the Internet as an external environment that is doing something or other to the adolescent (the effects model). In the popular communication functions of the Internet such as e-mail, instant messaging, blogs, chat and bulletin boards, adolescents are basically co-constructing their own environments.." (p392).

A survey of European parents in 2006 found that 18% believed that their children (under 18s) had viewed illegal or harmful content on the Internet (Livingstone 2008). As part of the "EU Kids Online" project, a review of research estimated that 20-30% of online teenagers had seen violent or "hate" sites, 20% had experienced online bullying or hostility, and 30-40% had seen online pornography (Livingstone 2007 quoted in Livingstone 2008). Another concern is that many sites include product placement or "advertgames" (games that involve the product) which children do not recognise as advertising.

Valkenberg and Peter (2009) summarised the fears about online communication and adolescents:

- i) "the Internet motivates adolescents to form superficial online relationships with strangers that are less beneficial than their real-world relationships";
- ii) "time spent with online strangers occurs at the expense of time spent with existing relationships";
- iii) "adolescents' social connectedness and well-being are reduced" (p1).

These concerns became known as the "reduction hypothesis", and initial research supported them (eg: Kraut et al 1998). But these studies in the 1990s were at a time when the minority of adolescents used the Internet (Valkenberg and Peter 2009). Kraut et al (2002) subsequently found that Internet use improved social connectedness and well-being in a follow-up of the original adolescent sample, but only if the Internet was used to maintain existing friendships not to make new friends (Bessière et al 2008).

Valkenberg and Peter (2009) explained this positive effect with the "Internet-enhanced self-disclosure hypothesis". Online communication stimulates online self-disclosure which produces better quality relationships, and this improves well-being for the individual. There are other factors involved as well - the type of

technology (Instant Messaging better than public chatrooms), boys more benefits than girls, and socially skilled more than socially anxious individuals.

Ito et al (2008) interviewed over 800 teenagers and young adults in the USA and observed over 5000 hours of online activity in the "Digital Youth Project". Two key findings come from the most extensive study to date:

i) Online media is used mostly to extend and develop friendships from offline. Some individuals find online friends through shared or niche interests.

ii) The self-directed learning of media literacy skills through peer-based reactions; eg; customising a "MySpace" page which receives feedback from others online.

This study painted a positive picture, in the main, of Internet use: "Contrary to adult perceptions, while hanging out online, youth are picking up basic social and technical skills they need to fully participate in contemporary society" (Ito et al 2008).

The ambivalence of the Internet can be seen in the existence, on the one hand, of self-injury bulletin boards for teenagers, and, on the other, opportunities for them to find health information (particularly where not generally available, like in the Third World). So Greenfield and Yan (2006) argued: "Just as we cannot ask whether a knife is inherently good or bad, we cannot ask whether the Internet is good or bad.." (p393).

Much of the concern about pornographic material on the Internet is "involuntary exposure" (Mitchell et al 2003). But there are adolescents, like adults, who use the Internet to actively seek such material.

Mesch (2009), in an Israeli study, found that frequent users of the Internet for pornography differed in social characteristics to other users - primarily, weaker social integration to school, society, and family. "The main implications of the results are that despite the wide availability of pornographic material on the Internet its consumption at high frequency is more a characteristic of troubled adolescents who lack a sense of being part of the society and positive attitudes to school, and report problematic relations with their families" (p615).

## Children's Understanding of the Internet

Yan (2005) explored US 5-12 year-olds' understanding of what the Internet is. As with many aspects of children's understanding, there seemed to be stages.

Four questions were asked about the technical complexity of the Internet and six questions about the social complexity, and in each case the children were scored at four levels (table 12).

	TECHNICAL COMPLEXITY	SOCIAL COMPLEXITY
Questions	1. What is the Internet? 2. Where is the Internet? 3. How big is the Internet? 4. If we could walk into the Internet, what would it look like inside?	1. What kinds of good things could the Internet do to us? 2. What kinds of bad things could the Internet do to us? 3. What kind of things do you like most on the Internet? 4. What kind of things do you not like on the Internet? 5. Do you need to be careful about when you go to WWW? 6. Do you need to be careful about when you
Scoring: Minimal level	Perceives Internet as one computer	Little knowledge of positive and negative social consequences of Internet
Partial level	Perceives Internet as more than one computer	Limited sense of positive and negative social consequences
Sophisticated level	Perceives Internet as one network	Strong understanding of social consequences of Internet, and aware of risks
Scientific level	Perceives Internet as multiple networks	Profound understanding, and thorough knowledge of online protection strategies

Table 12 - Questions and scoring system used by Yan (2005).

The youngest children (5-8 years) had limited understanding of the Internet, while slightly older children (9-10 years) saw it as "a thousand computers". The oldest children better understood the interactive nature of the Internet. Table 13 summarises the number of children allocated to each scoring level.

The differences in understanding can be seen in these quotes:

- From a five year-old: "...it has two computers on it. It is ten square feet large. It has toys and games. It wouldn't hurt you";



- From an eleven year-old: "Well, the Internet is the connection to computers and websites. There are millions of computers in it. You can find almost everything from the Internet, but you need to be very careful 'cause there are inappropriate and illegal websites" (Yan 2005 p385).

Understanding of the complexity of the Internet develops between 9-12 years old.

Understanding of risk was linked to direct experience with computers. However, this study may be outdated in that sense.

	5-8 year-olds	9-10 year-olds	11-12 year-olds
Technical complexity:			
Minimal	17	17	8
Partial	4	7	15
Sophisticated	0	1	10
Scientific	0	0	2
Social complexity:			
Minimal	17	17	12
Partial	4	8	19
Sophisticated	0	0	5
Scientific	0	0	0

(After Yan 2005)

Table 13 - Number of children allocated to different scoring levels based on age.

## CONCLUSIONS

Many aspects of childhood and child development occur in similar ways over time, whether it is the 20th or the 21st century. But child development does occur in a social context, and many behaviours are affected by the culture and the society where the children are growing up. So children growing up in the UK in the early 21st century will have similarities to children growing up in the early 20th century, for example, but, at the same time, there will be clear differences.

It is also difficult to accurately assess the experience of childhood today, particularly when popular opinion tends to focus upon the negative aspects of "youngsters today".

UNICEF (2007) produced a report comparing the lives and well-being of children in twenty-one industrialised nations under six different headings using forty separate indices. The report received publicity because the UK is rated last overall, and the USA next to last with the

Netherlands and Sweden top.

The six categories of child well-being were (and where the UK rated on each one):

- Material well-being - (UK 18th, Sweden 1st) eg: number of children living in low income families;
- Health and safety - (UK 12th, Sweden 1st) eg: infant mortality rate;
- Educational well-being - (UK 17th, Belgium 1st) eg: literacy achievements;
- Family and peer relationships - (UK 21st, Italy 1st) eg: number of single parents;
- Behaviours and risks - (UK 21st, Sweden 1st) eg: amount of time spent by parent talking to child;
- Subjective well-being - (UK 20th, Netherlands 1st) eg: experience of physical violence.

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## WHAT IS THE POINT OF CHILDHOOD?

Childhood (ie: infant helplessness and dependence) is long in humans compared to other species. Such dependence has risks in terms of evolution, like the child dies if the caregiver cannot provide. But such a prolonged period of dependence does allow for learning.

In the case of birds, altricial species are born immature and require extended nourishing, while precocial species are more mature at birth. The chicken is an example of the latter. Though they mature quickly after birth, their intelligence and learning abilities as adults are limited. Crows are an example of altricial species. For a bird, they show great intelligence and cognitive flexibility including tool-use (Gopnik 2009). Humans are similar to altricial species of birds, but an extreme version.

Gopnik (2009) noted: "Human babies are useless on purpose. Because they don't have to do the adult work of predating and mating, fighting and fleeing, they can discover how the world works and explore the possibilities it offers" (p44).

Developments in technology have aided the understanding of the young child. Newborns have sophisticated abilities that allow them to learn including the fact that they have more neural connections than the adult brain (Gopnik 2009). A driving force of learning is the curiosity associated with play.

It used to be believed that infants were "defective adults". In fact, they are different from adults: "They have equally complex and powerful, but very different minds, brains and lives, suited to their distinctive evolutionary role. Babies are brilliant learners but terrible planners, with fantastically creative and visionary imaginations but absolutely no executive capacity. They are the R&D department of the human species, the blue-sky guys, while we adults are production and marketing" (Gopnik 2009 p45).

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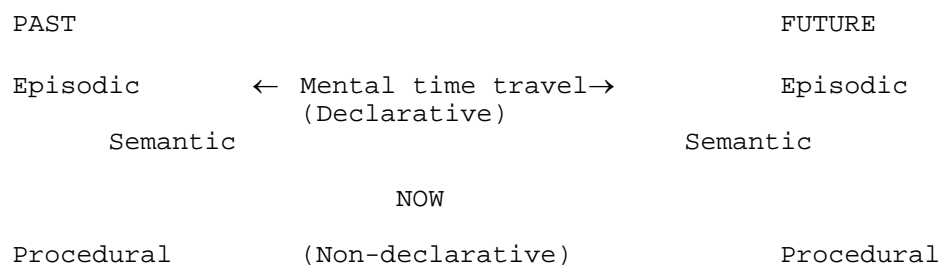
## DEVELOPMENT OF FUTURE THINKING IN PRE-SCHOOL CHILDREN

If you tell an adult that tomorrow they will walk a long way in the sun, future thinking will mean that they will anticipate the possibility of being thirsty.

Thinking about the future (ie: "mentally projecting the self forward in time") is seen as uniquely human (Atance 2008).

Though animals can appear to plan ahead, like caching food for winter, this behaviour does not have "the flexible future-oriented behaviour characteristic of human mental time travel" (Suddendorf and Corballis 2007 p305). Caching behaviour is instinctive and thus inflexible, as shown by young scrub jays who cached objects before they had developed the behaviour of retrieving them (Suddendorf and Corballis 2007).

Suddendorf and Corballis (2007) presented a model showing how prospection (future thinking) mirrors memory (past thinking) (figure 1). The question is when this ability of "mental time travel" <sup>14</sup> develops in children.



(After Suddendorf and Corballis 2007)

Figure 1 - Memory and prospective systems.

Busby and Suddendorf (2005) asked young children to describe something they would do tomorrow. Their parents judged the plausibility of the description - 31% for three year-olds, 69% for four year-olds, and 63% for five year-olds. The ability of future thinking is appearing after three years old.

This is confirmed by a similar experiment by Atance and Meltzoff (2005)(appendix 1). Children were asked to think about an outing somewhere the next day, and to choose one item from three to take (eg: lunch, bowl, comb). In this example, the choice of "lunch" would show future thinking as the child is aware that they might get

<sup>14</sup> A "faculty that allows humans to mentally project themselves in time to re-live, or forwards to pre-live, events" (Suddendorf and Corballis 2007 p299).

hungry. Almost all four and five year-olds chose the correct item, and so did many three year-olds (significantly more than chance), but significantly more of the older children were able to explain their choice with reference to future states (eg: I will be hungry tomorrow).

These two experiments face problems when studying pre-school children generally as well as specifically on this topic - namely, the language used. Do young children understand what "tomorrow" means? For some children it refers to the future in a vague sense. While two year-olds can talk about the future based on routine knowledge, like describing what will happen at bedtime (Atance 2008). Thus the need for research without verbal labels which does capture mental time travel.

Suddendorf and Busby (2005) devised this experiment to test the children's ability to anticipate a future state. Three, four, and five year-olds were taken into Room A which contained a puzzle board without pieces. Then they were taken into Room B which contained the puzzle pieces (among other things). The children were told that they would return to Room A, and to choose one item to bring with them. The choice of puzzle pieces was taken as a sign of future thinking (ie: the anticipation of a future state - play). Older children did so significantly more than the control group (which had no puzzle board in Room A), while three year-olds showed no difference between experimental and control conditions.

Atance and Meltzoff (2006) showed that even when children can understand the language related to the future, their current state dominates their thinking. This is known as "empathy gaps" (Loewenstein and Schkade 1999), or "presentism" (Gilbert et al 2002), or "projection bias" (Loewenstein and Angner 2003) - "the difficulty that people experience when trying to imagine themselves in a different state than their current one" (Atance 2008 pp296-297).

"What these constructs have in common is the idea that people rely too much on their current state when making predictions about the future" (Atance and Meltzoff 2006 p583). Read and Loewenstein (1995) have proposed the "time-contraction hypothesis": "people in certain circumstances essentially treat the future as if it were the present, failing to take into account the time that will pass between their current choice and the actual time of consumption (ie: the inter-consumption interval)" (Atance and Meltzoff 2006 p586).

Atance and Meltzoff (2006), using the state-manipulation paradigm, offered forty-eight children 36 pretzel (salty snack) each to eat, and encouraged them to

eat as many as they wanted over a twelve-minute period while the experimenter read to them. Five children who did not eat at least 12 pretzels had their data excluded from the study. The snacks made them thirsty, and they were offered a choice of another pretzel or water in the context of a story:

"Let's pretend that you're going to come back here tomorrow, and we're going to play a game with these marbles. We're not going to play with the marbles *right now*; we're going to play with them *tomorrow*." The critical test question was as follows: "What would you like to have for the marble game tomorrow: some pretzels to eat, or some water to drink?" (Atance and Meltzoff 2006 p584).

In the control condition, "tomorrow" was replaced by "now".

Most children choose water. When asked what they would choose tomorrow, most children (even four and five year-olds) said water (table 14).

EXPERIMENTAL CONDITION	PRETZEL	WATER
• Eat pretzel/choice now	3	9
• Eat pretzel/choice tomorrow	1	11
• No snack/choice now	10	2
• No snack/choice tomorrow	10	2

(After Atance and Meltzoff 2006)

Table 14 - Number of children choosing pretzel or water based on experimental condition.

Future thinking is intertwined with the ability to plan, and delay of gratification.

## 1. Planning

Young children can provide a description of an event that happened in the past as happening in the future, like bedtime. This makes use of semantic memory. Mental time travel is linked to episodic memory.

Hudson et al (1995) asked 3-5 year-olds to describe what happens with a particular event (eg: when you go to the park)(semantic memory/use of cognitive script) or plan for doing that event (involves future thinking). The responses to the former did not change with age, whereas five year-olds' plans were very different for the same event, including anticipation of problems. Such flexibility and foresight are characteristic of episodic memory (Atance 2008).

## 2. Delay of Gratification

The delay of gratification paradigm is commonly used with children to measure self-control, and make predictions about future behaviour. Children are offered a small reward now or a larger reward later. Mischel et al (1988) reported that adolescents, who their parents rated as better at planning and thinking ahead, had been able to delay gratification in the test at four years old.

Eigsti et al (2006) found that responses to the delay of gratification task at pre-school age predicted responses fourteen years later on the Go/No-Go task. Thirty-four children (15 female, 19 male), at four years old, were offered the possibility of one cookie immediately or two cookies 15 minutes later. The children had to sit in a room alone, with no distractions, and the rewards in front of them while the experimenter left the room. The experimenter returned after fifteen minutes, or if the child rung a bell to say they could not wait, had eaten the cookies, stood up, or showed signs of distress. Two measures were taken as the children were videotaped through a one-way mirror:

- Delay focus - time (in seconds) before child rang bell, ate cookies, or fifteen minutes up (maximum = 900 seconds);
- Temptation focus - estimation of time child spent looking at rewards (0-100%).

At approximately 18 years old, the same children were given the Go/No-Go task. This requires the participant to press a button when a target stimulus (eg: picture of cheese) appears for 500ms on the computer screen, but not if another stimulus appears (eg: picture of cat). There were 384 trials, and reaction time, and accuracy of response were measured.

In the delay of gratification task, thirteen children waited for 15 minutes. All the children were divided into high or low temptation focus based on the median. In the Go/No-Go task, the overall mean reaction time was 318ms. The low temptation focus group had a faster reaction time and made less errors.

Eigsti et al concluded: "the present findings suggest that an effective attentional control system, as reflected in preschoolers' ability to direct attention away from tempting aspects of the rewards in a delay of gratification task, may share a common mechanism with, or serve as a precursor for, long-term ability to inhibit attentional and behavioural responses, as reflected years later in performance on the Go/No-Go task" (p483).

In the growing research into future thinking, the



ability has been linked to the development of theory of mind among other cognitive abilities (Atance 2008).

#### APPENDIX 1 - ATANCE AND MELTZOFF (2005)

Atance and Meltzoff (2005) used scenarios that were uncommon for children, so they would not have "script-based" responses; eg: walking across a sunny desert. The aim was to evoke emotions like thirst. Of the three items offered, only one was correct for the scenario (table 15).

SCENARIO	EMOTIONS EVOKED	ITEMS
Walking across a sunny desert	Sun in eyes	<b>Sunglasses</b> , soap, mirror
Walking across a rocky stream	Hurt	<b>Band-Aids</b> , pillow, toothpaste
Walking along a long dirt road	Thirst	<b>Water</b> , card, shampoo
Walking across a snowy forest	Cold	<b>Winter coat</b> , water wings, towel
Walking up a steep, long mountain	Hunger	<b>Lunch</b> , bowl, comb
Walking close to a waterfall	Wet	<b>Raincoat</b> , money, blanket

(Bold = correct answer)

(After Atance and Meltzoff 2005)

Table 15 - Stimulus materials used in experiment 1.

In experiment 1, eighteen children each aged 3, 4, and 5 years old were contacted in the University of Washington area. Individually the children were presented with pictures of the six scenarios, and asked to choose the item to take from the yellow box. In the control conditions, children chose one item from a choice of three without any scenarios. So it was possible to compare the choices of each child from, for example, sunglasses, soap, and mirror with or without the scenario of the desert.

The dependent variable was scored by the correct choice of item (non-verbal measure) and the child's verbal explanation making reference to future states (eg: "it's gonna be hot").

The children chose the correct item significantly more often in relation to the scenario than the control condition. Overall, three year-olds chose the correct item on 74% of scenarios, while 91% and 97% for four and

five year-olds respectively. The older children made significantly more verbal references to future states than the three year-olds.

In experiment 2 the researchers offered the children items that were semantically associated with the scenario. For example, in the desert scenario, the choice of items was now sunglasses, soap or seashell (associated with sand)(table 16).

SCENARIO	SEMANTIC ASSOCIATED ITEM	REPLACED ITEM
Desert	Seashell (sand)	Mirror
Stream	Fish	Toothpaste
Road	Plant (by side of road)	Shampoo (Also card replaced by present)
Snow	Ice cubes	Towel (Also bathing suit replaced water wings)
Mountain	Sticks (wood/trees)	Comb
Waterfall	Rocks	Blanket

(After Atance and Meltzoff 2005)

Table 16 - Items offered to children in experiment 2.

Fifty-four new children were recruited for this experiment. The choice of correct items was 61% (3 year-olds), 75% (4 year-olds) and 92% (five year-olds). The younger children were more confused by the presence of the semantically associated item. "This finding suggests that during the early preschool years, children's thinking about a future event, and hence decisions that they make about a future event, may draw heavily on their knowledge about the thematic structure of the event, rather than how they anticipate themselves feeling in that event" (Atance and Meltzoff 2005 p355).

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# COGNITIVE DEVELOPMENT: SPECIFIC AND UNIVERSAL

## SOCIO-COGNITIVE DEVELOPMENT - SPECIFIC

Cognitive development has always been studied on the basis that older children outperform younger children as a rule, though there may be differences between individual children. But cognitive development is socio-cognitive development in that it takes place within a social and cultural context.

So, for example, cognitive development is the ability to discriminate categories of objects, while the socio-cognitive aspect is the ability to discriminate social categories, like race or ethnicity. Infants as young as six months old can perceptually distinguish different racial groups, and by school age, they show know of some social stereotypes (Apfelbaum et al 2008).

In categorisation tasks based on race, an anomaly in development appears - younger children (8-9 years old) perform better than older ones (10-11 years old). The reason being that the older children have internalised social norms, and in the USA, for example, one such norm for Whites is to appear unprejudiced by being "colour blind" (Norton et al 2006) (apparently not aware of the individual's skin colour, ethnicity, or race).

Apfelbaum et al (2008) hypothesised that "at approximately ten years of age, social concerns regarding the acknowledgement of race would override the traditional age group differences regarding improved performance on categorisation-based tasks" (pp1513-1514). 101 White children, aged 8-11 years, from three schools in the Boston area were recruited for the study. Each child was presented with photographs of adults which varied in different ways - background colour (red/blue), gender, weight, or race. The experimenter would hold up a photograph and the child had to find a match. The child could ask yes/no questions to the experimenter, with the goal of asking the fewest questions. The number of questions asked was the measure of the dependent variable.

In the race-relevant condition, the individual's race was the matching characteristic, while in the race-neutral condition it was another characteristic like gender among White photographs only. In the race-neutral condition, older children outperformed younger children in matching the photographs with fewer questions (mean 6.17 vs 7.04). This is expected in terms of cognitive development - category tasks are easier as children get older.

But in the race-relevant condition, the younger children asked fewer questions to get a match (mean 7.38

vs 8.30). This showed that older children were aware of not appearing prejudiced. In other words, they were less likely to ask about skin colour as the matching characteristic, and thus take longer (ask more questions) to reach the goal. So "the majority of older children in a race-relevant setting avoided mentioning race, even though doing so undermined their task performance" (Apfelbaum et al 2008 pp1515-1516).

## LANGUAGE AND NUMBERS - UNIVERSAL

The Sapir-Whorf hypothesis (Whorf 1956) proposed that thought is not possible without words to express it. In terms of children's development, it means that they will not have the concept without the language. The Sapir-Whorf hypothesis was criticised and went out of fashion.

However, the idea has been revived in relation to numbers and counting words (eg: Carey 2004). So, for example, without the word "five", the individual will not possess the concept of exactly five. In Amazonian cultures studied (eg: Pirahã language; Gordon 2004) which lack specific counting words, the language may use words like "one", "two", "few", and "many". "Without the vocabulary, only primitive, approximate numerical values are possible" (Butterworth et al 2008).

Consequently, such individuals fail on simple adding or subtracting tasks. While the Mundurukú, whose language contains words for "one", "two" and "three" but only approximate after that, have similar problems (Pica 2004).

Butterworth et al (2008) tested the Sapir-Whorf hypothesis in relation to numbers in Australia among Warlpiri, Anindilyakwa, and English speakers. Warlpiri has three types of number words - singular, dual plural, and more than dual plural (ie: 1, 2, more). Anindilyakwa has four types - singular, dual, trial (3 and sometimes, four), and plural (more than three). If the Sapir-Whorf hypothesis is correct, speakers of these two languages should be poorer at exact number tasks than English speakers.

Forty-five children aged 4-7 years were recruited - 20 Warlpiri-speaking, 12 Anindilyakwa-speaking, and thirteen English-speaking. Number ability was tested in four ways:

- Memory for number of counters - 14 trials each child with either 2, 3, 4, 5, 6, 8, or 9 counters.
- Cross-modal matching - The experimenter tapped two wooden blocks together a certain number of times and then placed counters on the mat. There were seven

trials in which the number of taps and counters sometimes matched and sometimes not.

- Non-verbal addition - Here "the experimenter placed one counter on her mat and, after 4 seconds, covered her mat. Next, the experimenter placed another counter beside her mat and, while the child watched, slid the additional counter under the cover and onto her mat.

Children were asked by the indigenous assistant to 'make your mat like hers'. Nine trials comprising  $2 + 1$ ,  $3 + 1$ ,  $4 + 1$ ,  $1 + 2$ ,  $1 + 3$ ,  $1 + 4$ ,  $3 + 3$ ,  $4 + 2$ , and  $5 + 3$  were used" (pp13183-4).

- Sharing - The children were asked to share disks among three toy bears (ie: basic division test).

In the memory task there was no difference between the language groups. All children were significantly better at recalling smaller numbers of counters, and all older children significantly better than younger ones. The same was true for cross-modal matching, non-verbal addition, and sharing.

The children speaking the languages without exact counting words did not differ from English-speaking children. Any differences were general ones based on age. This the Sapir-Whorf hypothesis as applied to numbers is not supported. "We conclude that the development of enumeration concepts does not depend on possession of a number-word vocabulary" (Butterworth et al 2008 p13182).

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## CHILDREN AND THE MEDICAL EXPERIENCE

Children's experience of pain and illness is studied in terms of their general understanding of illness as a concept, and the specific cases of children who do actually experience pain and chronic illness, including hospitalisation.

### 1. Understanding of illness as a concept.

As with all aspects of children's understanding, their understanding of illness can be linked to Piaget's stages of cognitive development (Bibace and Walsh 1980):

- Pre-operational stage (2-7 years) - No clear beliefs about illness and almost superstitious in ideas;
- Concrete operational stage (7-11 years) - By the end of this stage, an awareness of illness having biological causes;
- Formal operational stage (11 years and older) - An understanding of cause and effect allows the child to see the link between risks and consequences.

There is some dispute over these stages (Cassidy 2006), particularly in terms of the distinction between physical and mental illness. Buchanan-Barrow and Barrett (2005; quoted in Cassidy 2006) found that all children aged 5-11 years viewed a cold, for example, similarly, but differed in understanding mental illness. For example, younger children (5-7 years old) believed that mental illness could be "caught" (which was their view for physical illness). Personal experience is important in all cases (Cassidy 2006).

### 2. Experiencing pain and illness

Whereas all children will develop concepts of illness, only some will experience pain and illness. However, this takes place in an environment of myths including that children (particularly infants) do not experience or remember pain, that analgesics do not work, and that pain builds character (Sahinler 2002).

Children do remember pain from a very young age as much as pre-verbal studies can tell. For example, Taddio et al (1997) compared the reaction of boys (who had been circumcised) to vaccination at 4-6 months old. During the circumcision (soon after birth), some boys received an anaesthetic cream and others a placebo cream. The latter group cried longer in response to the vaccination (appendix 2).

The child's experience of pain is mediated by the level of anxiety in the mother, for example, including delayed recovery following surgery (Cassidy 2006), and the behaviour of the mother during the pain (Chambers et al 2002)(appendix 3).

The outcome of the illness in children is influenced by the same psychological factors as in adults - coping style, attribution of cause, and social support (Cassidy 2006).

### 3. Hospitalisation

The early work on prolonged hospitalisation of the young child, which was more common in the past, emphasised the effect upon attachment (eg: Robertson's film "A two-year-old goes to hospital", 1952). In this film, over a ten-day period, the lively child becomes withdrawn and depressed. At this time, parents tended not to stay with the child, which is not the case today.

Providing information beforehand to the child and the parents has proved effective; eg: infants undergoing minor surgery cried less and recovered quicker when the mothers were prepared (Cassidy 2006).

So the positive adjustment to hospitalisation involves interaction of three factors (Cassidy 2006):

- i) Separation or not from parent(s) - not separated;
- ii) Quality of parent-child relationship generally - secure attachment;
- iii) Behaviour of the parent(s) before and during hospitalisation - supportive and non-anxious.

In terms of coping with the stress of hospitalisation, Peterson et al (1999) studied children's reactions through role-play. Over three hundred eight-year-olds role played a medical procedure or a minor injury. Their responses were categorised by the researchers into pro-active coping strategies (eg: take deep breaths), reactive strategies (eg: pull away), or neutral strategies (eg: passive acceptance). The children tended to recommend pro-active responses for their friends, but chose reactive strategies for themselves.

Chen et al (2003) studied over one hundred children admitted to St.Louis Children's Hospital, USA, in the second half of 1999 with asthma (all 4-18 year-olds). Data were collected about the families and the neighbourhoods of the children who were admitted with asthma as their only chronic illness (table 17). It was found that severity of asthma played only a small part in hospitalisation (and future rehospitalisation at 1 year follow up), and the major predictors were family factors



like emotional reaction of caretaker to asthma, family conflict, financial stress, and feelings of unable to manage asthma by caretaker (table 18).

QUESTIONNAIRE	EXAMPLE OF ITEMS
Impact on Family Scale (IFS) (Stein & Reissman 1980)	24 items including disruption in normal activities because of illness, psychological burden on caretaker, financial impact of illness, family's ability to cope with stress caused by illness.
Family Environment Scale (FES) (Moss & Moos 1981)	Measures family conflict, cohesion, and expressiveness.
Paediatric Asthma Caregiver's Quality of Life (PACQLQ) (Juniper et al 1996)	eg: "how often child's asthma interfered with work". eg: "how often caregiver felt upset because of child's asthma symptoms."
Asthma-Related Beliefs of Parents	How often parent able to predict asthma will act up before it does; being able to prevent worsening; stop asthma once started.

Table 17 - Main questionnaires used by Chen et al (2003).

FACTOR	ODDS RATIO
IFS - impact on family	1.08
PACQLQ - disrupt parent's life - effect on caregiver	1.34 1.64
Beliefs - prevent worsening of asthma - stop asthma once started - predict when asthma act up	1.14 1.22 1.41

(After Chen et al 2003)

Table 18 - Odds ratio of factors associated with increased risk of future hospitalisation with asthma.

#### 4. Children's adherence to treatment

General factors of adherence to treatment are relevant like understanding and recall of information, and satisfaction with and trust of health professionals (Ley 1989). But with children understanding and communication become paramount. Non-adherence can be as high as 50% for chronic childhood conditions like asthma (Cassidy 2006).

DiMatteo (2000) recommended the following for health professionals:

i) Ensure that child and caregiver know exactly what behaviour for them is involved in treatment;

ii) Establish that child and caregiver are committed to treatment;

iii) Help child and caregiver overcome barriers that prevent adherence.

## APPENDIX 2 - TADDIO ET AL (1997)

Analgesia has commonly not been used with infant circumcisions because of the belief that any pain is insignificant. This study challenged that belief.

Eighty-seven newborns, who had been part of a clinical trial of "Emla" (an anaesthetic cream) in Canada, were followed up at routine vaccination, aged 4-6 months old. Twenty-nine boys had been given the cream during the circumcision at five days old or younger, 26 a placebo cream, and thirty-two controls of uncircumcised boys. Twenty-six children from the clinical trial were excluded from this study.

Infant pain response to the vaccination was scored from a videotape by raters blind to the purpose of the study and the infant's condition in the clinical trial. Three measures were made - facial appearance, cry duration, and visual analogue scale pain score. On all three measures, children from the placebo cream group showed significantly more pain to vaccination than the control group (table 19).

PAIN MEASURES	ANAESTHETIC CREAM GROUP (a)	PLACEBO CREAM GROUP (b)	CONTROL GROUP (c)	SIGNIFICANT (p <0.05)
Facial appearance score *	130	140	80	b vs c
Cry duration (% time)	50	55	25	b vs c
Visual analogue score **	3.3	5.1	3.1	a vs b b vs c

(\* Higher score = more distress)

(\*\* Higher score = more observer-rated pain)

Table 19 - Pain measures of infants receiving vaccination.

## APPENDIX 3 - CHAMBERS ET AL (2002)

This experiment looked at mother's reactions to her

child's pain experience, and the consequent response to pain of the child. One hundred and twenty healthy 8-12 year-olds and their mothers took part in this experiment in British Columbia, Canada. The gender divide was fifty-fifty. The children were randomly divided into one of three conditions - pain-promoting, pain-reducing, and control.

The pain was induced by a cold pressor (child places hand into ice-cold water) which is a standard and ethical technique for these types of experiments. There is no lasting damage and the child could withdraw their hand at any time.

Pain was measured in a number of ways:

- Intensity - Faces Pain Scale (Bieri et al 1990): child asked to point at drawing of face (based on score of 0-6);
- Emotions - Facial Affective Scale (McGrath et al 1985) - child chooses from nine faces to express happiness or sadness related to experience;
- Tolerance - length of time (seconds) of hand in water;
- Facial expression - an observer rated the child's facial actions every ten seconds.

In the pain-promoting condition, mothers were asked to say things from a list provided which previous research had shown increase the child's distress, and the pain-reducing condition was the opposite (table 20).

FACTORS THAT INCREASE CHILD'S DISTRESS	FACTORS THAT REDUCE CHILDREN'S DISTRESS
<ul style="list-style-type: none"> <li>• Reassurance</li> <li>• Empathy</li> <li>• Apologies</li> <li>• Giving control to child</li> </ul>	<ul style="list-style-type: none"> <li>• Non-procedural talk (distraction)</li> <li>• Encourage coping strategies</li> <li>• Humour</li> </ul>

Table 20 - Behaviour by mother found to increase or reduce child's experience of pain.

There was only a significant difference for pain intensity for girls. It was 4.40 in the pain-promoting condition, 3.45 in the control group, and lowest (2.60) in the pain-reducing condition.

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